Analysis and Design Environment for Large Scale System Models and Collaborative Model Development, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

Successes to date with the use of integrated software framework tools have led NASA engineers and other researchers to expand the breadth, depth, and sophistication of the problems that they are attempting to solve. Both the utilization of "high-fidelity" physics based models ("depth") and the total number of different engineering disciplines included in system models ("breadth") have steadily increased. As model size and complexity grows, the number of engineers involved in the development and maintenance of these models is also increasing. Increases in system model size and complexity and the corresponding need for collaborative model development are beginning to stretch the limits of existing software frameworks. Large models are more difficult to build and maintain, while the inclusion of more people in the development process leads to model management and coordination issues. Enhanced and improved framework tools are required if NASA and industry are to continue to expand their modeling, simulation, and design capabilities. In this project, Phoenix Integration will develop an innovative software environment that will allow individual engineers and collaborative engineering teams to better build and manage large, complex, system models. Key elements in the solution include a new infrastructure for hierarchical model building (models within models), enhanced data linking and model verification tools, and an integrated version-controlled model and data library. These tools will combine to provide NASA engineers with a powerful and flexible environment for creating, maintaining, and collaborating on the creation, execution, and maintenance of large and complex system models.

Primary U.S. Work Locations and Key Partners
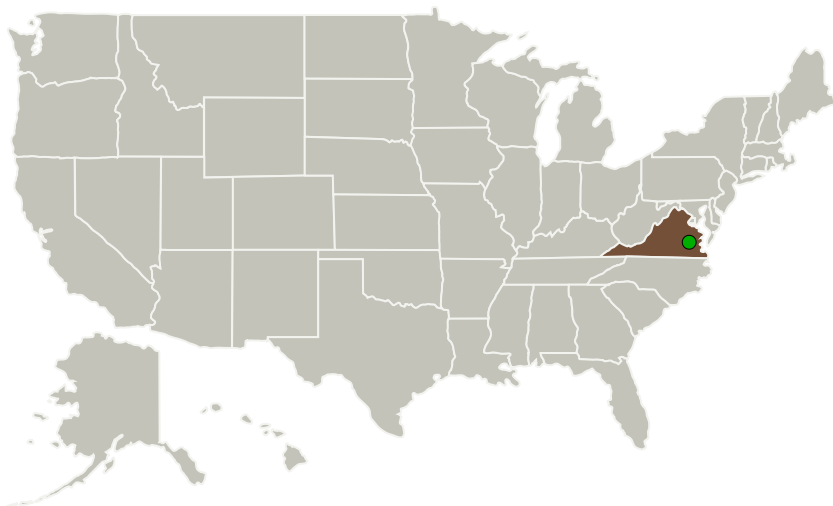
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Organizations Performing Work	Role	Type	Location
Phoenix Integration	Lead Organization	Industry	Blacksburg, Virginia
🟢Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations
Virginia

Project Transitions

▶ **February 2011:** Project Start

✔ **September 2011:** Closed out

Closeout Documentation:
- Final Summary Chart*(https://techport.nasa.gov/file/140174)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Phoenix Integration

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

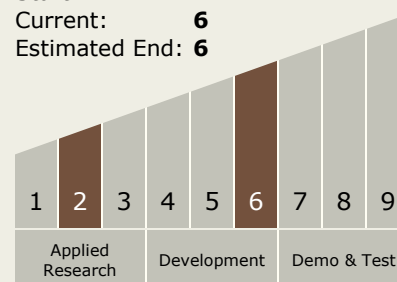**Program Director:**

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Scott A Ragon

Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**

1	2	3	4	5	6	7	8	9
	Applied Research		Development			Demo & Test		

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For more information and an accessible alternative, please visit:
https://techport.nasa.gov/view/9677

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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.4 Information Processing
    └ TX11.4.4 Collaborative Science and Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System